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Attorney's Docket No. P00743/70003

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

8-22-02

Applicant: Stephen D. SENTURIA  
Serial No.: 10/090,381 ✓  
Filing Date: March 4, 2002  
For: METHODS AND APPARATUS FOR WAVELENGTH-BASED OPTICAL  
PROCESSING

Examiner: Unassigned  
Art Unit:

Confirmation No.

Commissioner for Patents  
Washington, D.C. 20231

Sir/Madam:

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Transmitted herewith for filing is/are the following document(s):

- ☒ Supplemental Information Disclosure Statement
- ☒ PTO Form 1449 With Cited References
- ☒ Return Post Card

If the enclosed papers are considered incomplete, the Mail Room and/or the Application Branch is respectfully requested to contact the undersigned collect at (617)720-3500, Boston, Massachusetts.

No check is enclosed. If it is determined that a fee is necessary, the fee may be charged to the account of the undersigned, Deposit Account No. 23/2825. A duplicate of this sheet is enclosed.

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)

I hereby certify that this document is being placed in the United States mail with first-class postage attached, addressed to the Commissioner for Patents, Washington, D.C. 20231 on August 15, 2002.

Attorney's Docket No. P00743/7003

Respectfully submitted,

Stephen D. SENTURIA

Jeffrey B. Powers  
Registration No. 45,021  
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Boston, MA 02210  
Tel. (617)720-3500  
Attorneys for the Applicant(s)



Attorney's Docket No. P00743/7003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Serial No.: 10/090,381  
Filing Date: March 4, 2002  
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Commissioner for Patents  
Washington, D.C. 20231

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SUPPLEMENTAL STATEMENT FILED PURSUANT TO THE DUTY OF  
DISCLOSURE UNDER 37 CFR §1.56, 1.97 AND 1.98

Sir:

Pursuant to the duty of disclosure under 37 C.F.R. §§1.56, 1.97 and 1.98, the Applicant requests consideration of this Information Disclosure Statement.

Compliance with 37 C.F.R. §1.97

This Information Disclosure Statement is being filed before the mailing date of a first Office Action on the merits in the above-identified case. No fee or certification is required.

Information Cited

The Applicant hereby makes of record in the above-identified application the information listed on the attached form PTO-1449 (modified). The order of presentation of the references should not be construed as an indication of the importance of the references.

REMARKS

Documents cited on the attached form PTO-1449 (modified) are enclosed unless otherwise indicated on the attached form PTO-1449 (modified). It is respectfully requested that:

1. The Examiner consider completely the cited information, along with any other information, in reaching a determination concerning the patentability of the present claims;

2. The enclosed form PTO-1449 be signed by the Examiner to evidence that the cited information has been fully considered by the Patent and Trademark Office during the examination of this application;

3. The citations for the information be printed on any patent which issues from this application.

By submitting this Information Disclosure Statement, the Applicant makes no representation that a search has been performed, of the extent of any search performed, or that more relevant information does not exist.

By submitting this Information Disclosure Statement, the Applicant makes no representation that the information cited in the Statement is, or is considered to be, material to patentability as defined in 37 C.F.R. §1.56(b).

By submitting this Information Disclosure Statement, the Applicant makes no representation that the information cited in the Statement is, or is considered to be, in fact, prior art as defined by 35 U.S.C. §102.

Notwithstanding any statements by the Applicant, the Examiner is urged to form his own conclusion regarding the relevance of the cited information.

An early and favorable action is hereby requested.

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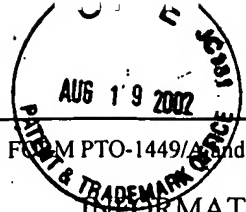
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FORM PTO-1449/A and B (Modified) <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>				APPLICATION NO.: 10/090,381		ATTY. DOCKET NO.: P00743/70003	
				FILING DATE: March 4, 2002			
				APPLICANT: Stephen D. SENTURIA			
				GROUP ART UNIT:		EXAMINER:	
Sheet	1	of	9				

**U.S. PATENT DOCUMENTS**

Examiner's Initials #	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication or of issue of Cited Document MM-DD-YY
		Number	Kind Code		
		3,553,364		Lee	01/05/71
		4,234,788		Palmer et al.	11/18/80
		4,731,670		Allen et al.	03-15-1988
		4,805,038		Seligson	02-14-1989
		5,022,745		Zayhowski et al.	06/11/91
		5,115,344		Jaskie	05-19-1992
		5,164,688		Larson	11/17/92
		5,168,249		Larson	12/01/92
		5,175,521		Larson	12/29/92
		5,206,557		Bobbio	04/27/93
		5,212,582		Nelson Technology Center 2600	05/18/93
		5,291,502		Pezeshki et al.	03/01/94
		5,311,360		Bloom et al.	05-10-1994
		5,353,641		Tang	10/11/94

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Examiner's Initials #	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document (not necessary)	Date of Publication of Cited Document MM-DD-YY	Translation (Y/N)
		Office/ Country	Number	Kind Code			
		WO	98/41893	A1		09-24-1998	
		WO	91/02991	A1		03-07-1991	

**OTHER ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS) title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, relevant page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
		<u>MICROMECHANICAL LIGHT MODULATOR ARRAY FABRICATED ON SILICON</u> , K.E. PETERSEN, IBM Research Lab., Applied Physics Letters, Vol. 31, No. 8, 10/15/77, pp 521-523	

EXAMINER	DATE CONSIDERED
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<b>FORM PTO-1487A and B (Modified)</b>  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>				APPLICATION NO.: 10/090,381		ATTY. DOCKET NO.: P00743/70003	
				FILING DATE: March 4, 2002			
				APPLICANT: Stephen D. SENTURIA			
				GROUP ART UNIT:		EXAMINER:	
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		Number	Kind Code		
		5,392,151		Nelson	02/21/95
		5,396,066		Ikedo et al.	03/07/95
		5,459,610		Bloom et al.	10-17-1995
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		5,739,945		Tayebati	01/14/98
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		Office/ Country	Number	Kind Code			
		WO	01/11394	A1		02-15-2001	
		WO	01/11419	A2	Godil et al.	15-02-2001	--
		WO	01/11410	A1	Thackara et al.	02/15/01	
		WO	01/11396	A1		02-15-2001	

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		<u>MINIATURE FABRY-PEROT INTERFEROMETERS MICROMACHINED IN SILICON FOR USE IN OPTICAL FIBER WDM SYSTEMS</u> , J.H. JERMAN et al., IEEE 1991 372, International Conf. On Solid-State Sensors and Actuators 1991, pp 372-375	

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		5,808,797		Bloom et al.	09-15-1998
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		Office/ Country	Number	Kind Code				
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		EP	1 143 287	A2		10-10-2001		

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		Solgaard et al., "Deformable grating optical modulator," <u>Optics Letters</u> , Vol. 17, No. 9, May 1, 1992, pgs. 688-690.		
		Goossen et al., "Silicon Modulator Based on Mechanically-Active Anti-Reflection Layer with 1 Mbit/sec Capability for Fiber-in-the-Loop Applications," <u>IEEE Photonics Technology Letters</u> , Vol. 6, No. 9, September 1994, pgs. 1119-1121.		
		<u>SPECTRALLY SELECTIVE GAS CELL FOR ELECTROOPTICAL INFRARED COMPACT MULTIGAS SENSOR</u> , MELÉNDEZ et al., Elsevier Science S.A., Sensors and Actuators 46-47 (1995) 417-421		
		<u>SILICON MICROMACHINED INFRARED SENSOR WITH TUNABLE WAVELENGTH SELECTIVITY FOR APPLICATION IN INFRARED SPECTROSCOPY</u> , D. ROSSBERG., Elsevier Science S.A., Sensors and Actuators 46-47 (1995) 413-416		
		<u>CONTINUOUS-MEMBRANE SURFACE-MICROMACHINED SILICON DEFORMABLE MIRROR</u> , BIFANO et al., Soc. of Photo-Optical Ins. Eng. Opt. Eng. 36(5) May 1997, pp 1354-1360		

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		<u>DESIGNS TO IMPROVE POLYSILICON MICROMIRROR SURFACE TOPOLOGY</u> , BURNS et al., SPIE- Society of Photo-Optical Instrumentation Engineering, Vol. 3008, 1997, pp 100-110		
		<u>OPTICAL BEAM STEERING USING SURFACE MICROMACHINED GRATINGS AND OPTICAL PHASED ARRAYS</u> , BURNS et al., SPIE, Vol. 3131, 1997, pp 99-110		
		<u>INVESTIGATION OF THE MAXIMUM OPTICAL POWER RATING FOR A MICRO-ELECTRO-MECHANICAL DEVICE</u> , BURNS et al., Internat'l Conf. On Solid-State Sensors and Actuators 06/16/97-06/19/97, pp 335-338		

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		Number	Kind Code		
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		5,969,848		Lee et al.	10/19/99
		5,978,127		Berg	11/02/99
		5,991,079		Furlani et al.	11-23-1999
		5,998,906		Jerman et al.	12/07/99
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		6,144,481		Kowarz et al.	11-07-2000
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		6,175,443	B1	Aksyuk et al.	01-16-2001
		6,181,458		Brazas, Jr. et al.	01/30/01
		6,188,519	B1	Johnson	02-13-2001
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		<u>NONLINEAR FLEXURES FOR STABEL DEFLECTION OF AN ELECTROSTATICALLY ACTUATED MICROMIRROR</u> , BURNS et al., Air Force Institute of Technology, Dept. of Ele and Comp Eng., Wright-Patterson AFB, Ohio, SPIE Vol. 3226, 1997, pp 125-136		
		<u>SYNTHETIC SPECTRA: A TOOL FOR CORRELATION SPECTROSCOPY</u> , SINCLAIR et al., Applied Optics, Vol. 36, No. 15 05/20/97, pp 3342-3348		

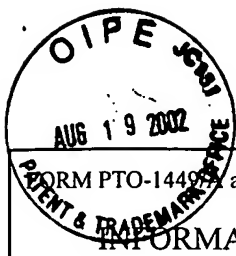
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		Number	Kind Code		
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		6,243,194	B1	Brazas, Jr. et al.	06-05-2001
		6,252,697		Hawkins et al.	06/26/01
		6,268,952	B1	Godil et al.	07-31-2001
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		<u>SYNTHETIC INFRARED SPECTRA</u> , SINCLAIR et al., Optical Society of America, Optical Letters, vol. 22, No. 13 07/01/97, pp 1036-1038	
		<u>ELECTROSTATIC EFFECTS IN MICROMACHINED ACTUATORS FOR ADAPTIVE OPTICS</u> , HORENSTEIN, et al., Dept. of Aerospace and Mech. Eng., BU, Boston, MA, J. of Electrostatics, pp 69-81 (1997)	
		<u>ANALYSIS OF GRATING LIGHT VALVES WITH PARTIAL SURFACE ELECTRODES</u> , FURLANI et al., J. Appl. Phys. 83 (2), 01/15/98, American Institute of Physics, pp 629-634	
		<u>POSITIONING, CONTROL, AND DYNAMICS OF ELECTROSTATIC ACTUATORS FOR USE IN OPTICAL AND RF SYSTEMS</u> , E.S. HUNG, 08/21/98 thesis Massachusetts Institute of Technology, 107 pages	
		<u>OPTICAL PHASE MODULATION USING A REFRACTIVE LENSLET ARRAY AND MICROELECTROMECHANICAL DEFORMABLE MIRROR</u> , COWAN et al., AFRL/MLP, Optical Engineering, Vol. 37 No. 12, 12/123/98, pp 3237-3247	
		<u>LEVERAGED BENDING FOR FULL-GAP POSITIONING WITH ELECTROSTATIC ACTUATION</u> , E.S. HUNG et al., MIT, Solid-State Sensor and Actuator Workshop Hilton Head Island, SC 06/08/98-06/11/98 pp 83-86	

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Sheet 7 of 9					

**U.S. PATENT DOCUMENTS**

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		Number	Kind Code		
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		6,284,560	B1	Jech, Jr. et al.	09-04-2001
		6,288,824	B1	Kastalsky	09-11-2001
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Examiner's Initials #	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document (not necessary)	Date of Publication of Cited Document MM-DD-YY	Translation (Y/N)	
		Office/ Country	Number	Kind Code				

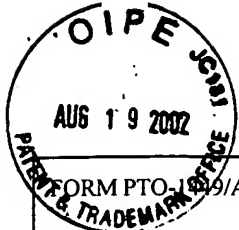
Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS) title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, relevant page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)	
		<u>MEMS DEFORMABLE MIRRORS FOR ADAPTIVE OPTICS</u> , BIFANO, et al., Dept. of Aerospace and Mech. Eng., BU, Boston, MA, Solid-State Sensor and Actuator Workshop Hilton Head Island, SC 06/08/98- 06/11/98 pp 71-74		
		<u>DEVELOPMENT OF MICROELECTROMECHANICAL VARIABLE BLAZE GRATINGS</u> , BURNS et al., Elsevier Science S.A. Conf. On Solid-State Sensors and Actuators, 1998, pp 7-15		
		<u>OPTICAL POWER INDUCED DAMAGE TO MICROELECTROMECHANICAL MIRRORS</u> , BURNS et al., Elsevier Science S.A. Conf. On Solid-State Sensors and Actuators, Sensors and Actuators A 70 (1998), pp 6-14		
		<u>MICROMECHANICAL FIBER-OPTIC ATTENUATOR WITH 3 <math>\mu</math> RESPONSE</u> , FORD et al., IEEE, J. of Lightwave Technology, Vol., 16, No. 9 Sept. 1998 pp 1663-1670		
		<u>THE POLYCHROMATOR: A MEMS CORRELATION SPECTROMETER</u> , HUNG et al., Microsystems Technology Laboratories Annual Report 1998,		
		<u>MEMS: RESEARCH AND APPLICATIONS IN MICROELECTROMECHANICAL SYSTEMS</u> , HUNG et al., Poster Session Guidebook, 03/31/98, pp 1 and 4		

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FORM PTO-159/A and B (Modified)		APPLICATION NO.: 10/090,381	ATTY. DOCKET NO.: P00743/70003
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		FILING DATE: March 4, 2002	<b>RECEIVED</b>
		APPLICANT: Stephen D. SENTURIA	<b>AUG 21 2002</b>
		GROUP ART UNIT:	EXAMINER: Technology Center 2600
Sheet	8	of	9

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Examiner's Initials #	Cite No	Include name of the author (in CAPITAL LETTERS) title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, relevant page(s), volume-issue number(s), publisher, city and/or country where published.	Translation (Y/N)
		Ford et al., "Dynamic Spectral Power Equalization Using Micro-Opto-Mechanics," <u>IEEE Photonics Technology Letters</u> , Vol. 10, No. 10, October 1998, pgs. 1440-1442.	
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FOR PTO FORM 9/A and B (Modified)				APPLICATION NO.: 10/090,381		ATTY. DOCKET NO.: P00743/70003	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				FILING DATE: March 4, 2002		RECEIVED	
				APPLICANT: Stephen D. SENTURIA		AUG 21 2002	
Sheet 9 of 9		GROUP ART UNIT:		EXAMINER: Technology Center 2600			

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		<u>VARIABLE GRATINGS FOR OPTICAL SWITCHING: RIGOROUS ELECTROMAGNETIC SIMULATION AND DESIGN</u> , GANI et al., Opt. Eng. 38(3) 552-557, (March 1999) Soc. of Photo-Optical Ins. Eng. pp 552-557		
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